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SOME EFFICIENCY METHODS OF CITY ADMINISTRATION

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In some quarters such a title as the one this paper carries will be considered inapt and misleading. Some people assume that efficiency and city administration are as far apart as the poles. Much has been said and written about the inefficiency in city affairs. Along with this goes an assumption that there are methods of efficiency open to the manager of private business that must forever remain a closed book to the city administrator; in short, that a man placed in charge of a private enterprise would be efficient, while the same man placed in charge of a similar business operated by the city would be inefficient. Perhaps these two complementary assumptions explain in part the widespread fear manifested at every extension of the city's activity, which fear for some reason or other is always more acute in connection with the city's operation of profit making or income bearing projects. If these two assumptions are true, then it is indeed a sad day for us, since the city already conducts an enormous business, whose extent and scope show no signs of decreasing.

However, there is a growing disposition to question these two assumptions. First of all there is at least a suspicion that privately conducted business is not 100 per cent efficient. These assumptions grow into specific charges, quoted freely in the current press, as having come from the Secretary of Commerce; they come to light in suits against public utility companies¹ and in studies of unemployment, and other studies of industrial conditions.²

It is the purpose of this paper to describe a few methods already in use in the city government of Philadelphia which, in results accomplished, point toward efficiency. They are significant in that they indicate the possibility of the city administrator's bringing to his aid such methods of management as are found useful in the

¹ *Cooke et al v. Phila. Electric Co. Pub. Ledger* (Phila.), Dec. 27, 1915.

² *Report on Unemployment in Philadelphia, 1915*, by Joseph Willits.

industrial world in solving similar problems, and that there is no natural antagonism between efficiency and city administration. Now to the writer efficiency is, at most, a relative term. It involves the setting up of definite standards by which progress can be measured. One valuable comparison in this connection would be that of methods employed in city administration with those of privately conducted business. Limitations of time and space prevent such a comparison at this time. This paper will be confined to methods employed in city administration, and by contrasting the past with the present, it is hoped a measure of progress may be presented.

1. Concerning the Adjustment of Bills Against the City

Anything that cuts the red tape, and insures the speedy and satisfactory payment of bills contractors and tradespeople have against the city, increases the number of bidders upon city contracts and supplies, and thereby increases the city's chance of securing a more favorable price on such contracts and supplies. The amount of bother to which a creditor of the city is put in getting a bill paid is a matter of little concern to most of us. But it is safe to say the city has paid for all of it, and more.

Bills against the city of all kinds are settled by warrant. When the Blankenburg administration came into office, there were found in practically each division of the service, warrant orders that differed from one another in size, style and color of paper. To remedy this condition there has been instituted an order which is in the nature of a check and stub—the order or check end being framed in such a fashion that it can be deposited in the bank and the stub end or departmental receipt being returned to the office forwarding the order. The difference in styles is shown on page 91 (a) being the old style and (b) the present order in use.

The warrant order-receipt is now in use throughout the entire Department of Public Works, and other municipal departments. It has saved considerable time of city employees and those having business with the city. Under the old system it was necessary for the clerk having this matter in hand to write out a post card notifying the individual to call and receipt for warrant order. Then when this was done the latter would go to the City Controller's office and possibly be compelled to wait an indefinite time owing to congestion of business, after which he would go to the City Treas-

urer's office and cash the warrant. Finally he would take the cash received and deposit it in bank. Under the new procedure as soon

DEPARTMENT OF PUBLIC WORKS
DIRECTOR'S OFFICE

PHILADELPHIA 191

JOHN M. WALTON, ESQ.,

CITY CONTROLLER

DEAR SIR:

PLEASE DELIVER TO

OR BEARER, WARRANT No. _____ FOR \$ _____

YOURS VERY TRULY:

CHIEF CLERK

DIRECTOR'S OFFICE DEPT OF PUBLIC WORKS PHILADELPHIA	NO. _____	AMOUNT \$ _____	RECEIVED FROM THE DIRECTOR'S OFFICE, ORDER FOR THE ABOVE NUMBERED WARRANT.
WARRANT RECEIPT		1911	

DIRECTOR'S OFFICE DEPT OF PUBLIC WORKS PHILADELPHIA	NO. _____	AMOUNT \$ _____	RECEIVED FROM THE DIRECTOR'S OFFICE, ORDER FOR THE ABOVE NUMBERED WARRANT.
WARRANT ORDER		1911	

TO THE CITY CONTROLLER
 (ROOM 146, CITY HALL)

PLEASE DELIVER TO PAYEE NAMED BELOW, OR ORDER, WARRANT, AS ABOVE NOTED,
 IN FAVOR OF _____ DOLLARS

SIGNED _____

THIS RECEIPT SHOULD BE SIGNED, DATED AND
 RETURNED TO THE DIRECTOR'S OFFICE, ROOM 216,
 CITY HALL, IMMEDIATELY, TO INSURE PAYMENT OF
 WARRANT.

(b) _____ (TITLE)

as the City Controller's office notifies a city department that the warrants are ready for delivery, the department mails out the warrant orders in "window" envelopes and the recipients can then

endorse the orders and place them in the bank for collection. Receipts for warrants are generally returned to the department within twenty-four hours after mailing the orders.

One of the officers of the Department of Public Works has estimated that it saves in money value of time saved, on the \$17,000,000 spent for materials alone by the entire city, \$60,000, which is not an inconsiderable percentage.

When one considers that in the Department of Public Works alone there are over 600 warrant orders mailed each month, or a total of 7,200 per year, it can readily be seen that it saves the business man many hours in time and much needless bother formerly spent in making unnecessary trips around City Hall.

2. Concerning the Handling of Inspection

There are 45 inspectors under the Registrar, in the Bureau of Water. These inspectors read meters, inspect meter installation, count water fixtures and inspect for the waste of water in dwellings. This data is used for the basis of water-rent charges. Formerly the opinion prevailed among inspectors and their superiors that an "outside man" could not be supervised. So each inspector was given a district, composed of a certain number of political wards, and turned loose to collect this data as he saw fit. From the records kept no one could tell for sure how many hours a day an inspector worked or whether he worked at all or not. For an inspector soon learned how to make out his report without resorting to the laborious process of making all the inspections which his reports covered. He compiled a book, in which he listed the houses in his district, with their fixtures counted and entered therein. Water fixtures are fairly constant in number, and changes generally consist in additional fixtures. Since a consumer does not kick at an undercharge, the inspector could with comparative safety consult his book, and write out his report from the door step, the corner saloon or his own home. Even after the introduction of a few meters the inspector found he could dispense with three or four readings a year—he could compute this quarter's bill on the basis of last quarter's reading. Here again safety lay in making the computation low enough to escape a kick from the consumer.

The present Registrar³ tried to standardize the work of these inspectors. He tried to set up the best method of procedure, and

³J. A. Carlin.

have it followed, and then to keep such records that some standard day's work could be determined by which each inspector's work could be judged. This involved careful planning of each day's work and control over the inspector while on the outside.

Now an inspector's work is planned and laid out for him each day. Five of the brightest men were appointed as supervising inspectors. Each meets his group of inspectors at an appointed time and place each morning, and gives each inspector a copy of his route for the day. These route sheets are made in triplicate, one being retained by the supervising inspector, while one is posted on a bulletin board in the Registrar's office. Each inspector is given blank forms which he must fill for each individual address with information gained from his inspection. These blanks are of four kinds: for meter readings, for meter installations, for regular fixture counting, or for complaints in regard to leaks, etc. When the blanks are filled out, and the recapitulation made on the route sheet, the inspector has made a complete daily report, from which the quality and quantity of his work can be judged, and compared with the standard set by the whole division. These reports are turned in to the supervising inspectors at the close of the day. This method of handling the work breaks up the hard and fast district lines, and makes it impossible for the inspector to have his report ready made in his pocket. He cannot very well make or carry a book covering the whole city as he formerly did for his small district. It is possible to know approximately where an inspector is working by consulting the master route. A chief inspector works as a free lance to check up the accuracy of the work. He follows first one man and then another, or goes on special or difficult cases where there is controversy or complaint. The inspector does not know when his route is being followed, so it is an incentive to do accurate and honest work.

The standard day's work is a matter of averages. It is true that in the nature of the case no two houses will take exactly the same time to inspect. The reading of the meter in the basement of an office building is a simple matter compared with counting all the water fixtures in an apartment house. But it is true, nevertheless, that in the course of a month averages can be obtained which make a standard by which an inspector's daily work can be judged. In comparing an inspector's work with the standard, the kind of work he is on is always taken into account.

The accompanying table B shows the monthly averages for the year 1914.

TABLE B

	A	B	C	D	E	F	G	L	H	J	K
1914 Month	Working days in month	Number of inspectors on duty	Total inspector-days in month $A \times B = C$	Total inspector-days in office	Total inspector-days absent	Total inspector-days off street $D + E = F$	Total inspector-days on street $C - F = G$	Average no. of inspectors on street $\frac{G}{L} = \frac{H}{A}$	Total inspections	Average no. of inspections per inspector-day $\frac{H}{J} = \frac{K}{G}$	Average no. of inspections per day $\frac{H}{K} = \frac{J}{A}$
January	23.5	46	1,081	493.5	12.5	506	575	24.4	22,175	38.6	943
February	20	46	920	200	41.5	241.5	678.5	33.9	17,490	25.9	874
Average to date	21.7	46	1,000	346.7	27	373.7	626.3	28.9	19,832	31.6	914
March	24	46	1,104	398.5	26	424.5	679.5	28.3	23,508	34.6	979
Average to date	22.5	46	1,035	364	26.6	390.6	644.4	28.6	21,057	32.7	936
April	23	44	1,012	332.5	20.5	353	659	28.6	44,675	67.6	1,942
Average to date	22.6	45.5	1,028	356.1	25.1	381.2	645.8	28.5	26,962	41.7	1,193
May	23	43	989	312.5	19.5	332	657	28.5	23,884	36.7	1,038
Average to date	22.7	45	1,021.5	347.4	24	371.4	650.1	28.6	26,346	40.5	1,160
June	24	43	1,032	337	27.5	364.5	667.5	27.8	22,058	33	919
Average to date	22.9	44.6	1,021.3	345.6	24.6	370.2	651.1	28.4	25,631	39.2	1,119
July	24.5	42	1,029	312	100	412	617	25.1	17,045	27.6	695
Average to date	23.1	44.2	1,021	340.8	35.3	376.1	644.9	28	24,404	37.8	1,056
August	23.5	41	963.5	136.5	280	416.5	547	23.2	14,203	25.9	604
Average to date	23.1	43.8	1,011.7	302.7	65.9	368.6	643.1	28	23,129	34.9	1,001
September	23	42	966	298	61.5	359.5	606.5	26.3	21,713	35.7	943
Average to date	23.1	43.6	1,007.1	302.1	65.4	367.5	639.6	27.6	22,971	35.9	994
October	23.5	42	987	317.5	51.5	369	618	26.3	36,011	58.2	1,532
Average to date	23.1	43.4	1,002.5	303.7	64	367.7	634.8	27.4	24,275	38.2	1,050
November	21	41	861	258	17	275	586	27.9	23,284	39.7	1,109
Average to date	22.9	43.2	989.3	295.9	59.7	355.6	633.7	27.6	24,185	38.1	1,056
December	24	41	984	346	53	399	585	24.4	19,923	34	830
Average to date	23	43	989	303.4	59.1	362.5	626.5	27.1	23,380	38	1,036

The column H is the one from which the Registrar gets his most valuable information regarding each man's work. The reason for seemingly large variation is perfectly clear to him, and is due for the most part to different parts of the city in which the inspection was being carried on from month to month. It will be noted that while the "average number of inspections per inspector day" varied from month to month, the "average to date" is fairly constant, and varies but little at any time from the average for the whole year.

This sort of recapitulation is posted monthly, so the Registrar can at any time compare an inspector's work for the day and by taking into account the nature of the district he is working in, tell at once whether in quantity his work is up to the standard. Any errors that may come to light, either through subsequent investigation, or following a complaint of the consumer, or the report of the Chief Inspector are entered against the record of the inspector who made the error.

In short, it is easily possible in this way to tell the good work from the bad. The net result has been a great increase in the quantity and quality of the work. There was much dissatisfaction and friction at first. The men didn't understand just what was being done. They were fearful lest some of their cherished "rights" were being infringed upon. Comparison of one man's work with another, or with the average, was odious at first. The Registrar could offer no incentive in increase of salary to the better man, and could offer five only the raise in rank to that of "supervising inspector" which means, in reality, more responsibility and more work, for the same pay. Yet there was a fear of dismissal, and the incentive for "beating the record." The men soon found that after all it was not so difficult to do good work when it was expected of them, and their work was so planned that good work was possible. An *esprit de corps* has been built up. Errors have been reduced to a minimum. Each inspector hopes in time to become a supervising inspector, for there is something fascinating to most men, in occupying a position of responsibility and power, although it means more work and no additional pay. From the Annual Report of the Registrar we find that in 1911, 54,382 inspections of all kinds were made by the inspectors in this division. This number did not include serving of bills or reading meters. In 1914, 285,969 inspec-

tions were made by the same number of men, including the serving of 86,532 bills and 86,087 meter readings. As a result of the increased inspection in 1913, water rents were increased on the same properties over \$150,000 while many properties, not heretofore on the books of the Water Bureau, and not paying water rent, were found, billed and placed on the books for subsequent years. The complete report for 1915 is not available as this is written, but the work thus far shows as equally good results as those of 1913 and 1914.

One improvement in the method of keeping the books and making out the schedules of charges which the Registrar has made, has likewise resulted in a great saving in time and money. The permanent and official record of the 335,000 separate accounts carried by the Division was formerly kept in immense, permanently bound ledgers. Five copies of the schedules, taken from this record, must be made each year. Formerly they were made in long hand. The water rent book for previous years was compared and corrected by ledger for the current year. Then a master copy was made in long hand from this correct copy, which copy was then checked by the ledger. Three and in some cases four copies of this master copy were then made in long hand, and each compared with the master copy.

Now loose-leaf schedule books and ledgers are used. From the ledger, which has been corrected for the current year, with all additions, etc., made, as many typewritten copies as are needed are made at one operation. The typewritten copies are then compared with the ledger, and any necessary changes are made on the original and duplicates at the same time. These copies are bound in loose-leaf binders for the various departments which require them. Thus the chance for error has been reduced to a minimum. All copies of the schedule are alike. There is only one checking operation instead of four or five. The typewritten copies are, of course, much more legible and satisfactory. And in addition to all this, there has been a saving in expense to the city.

For 1912, making these schedules in long hand cost \$4,367.38, while for 1915 the cost was only \$2,779, a saving of 34 per cent, although there were more accounts to be entered and one additional set of books⁴ to be made.

⁴ From a letter to the writer from J. A. Carlin, Registrar of Water Bureau, Jan. 17, 1916.

The experience of the Registrar is significant in that it shows what can be done, even under adverse conditions, when the man who knows how, and wants to be efficient, is placed in a responsible position in city administration.

3. *Concerning Cost Keeping Records*

It is possible for the city administration to operate a unit cost system. This has been done in the Bureau of Water and in the Bureau of Highways of Philadelphia.⁵ It now becomes possible not only to compare street cleaning and repair work on the streets, bridges and sewers of Philadelphia with the cost and quality of work in other cities, but with that done by different districts of the same bureau or gangs in the same district. A friendly rivalry and a pride in the work can be fostered by the proper use of the unit cost system.

A standard can thus be set up which will throw into bold relief the strong and weak points of the whole system. The mere keeping of a record, which a man knows will come before the eyes of his superior, is an incentive to that man to do better work. The purpose of the unit cost system installed in the Bureau of Highways, as given by the Chief of that Bureau, is:⁶

(a) To ascertain the quantity and total and unit cost of each class of work performed which will provide data to facilitate the preparation of budget and prospective work estimated and also afford a basis from which may be determined the fairness of unit prices bid on contract work.

(b) To provide data to assist in the determination of the time beyond which it would be undesirable for economic reasons to continue maintenance work in existing pavements, or in other words, the time when replacements must be contemplated.

(c) To secure by interpretation of the data, knowledge as to the efficiency of performance of the Bureau's forces, and to assist in showing the adequacy of the service rendered to the public.

(d) To show the quantity and cost of each class of work performed within the boundaries of any district, or unit length of highway, or on any specific structure or job.

(e) To show separately the varying and principal elements of expense, such as labor, hauling and materials, entering into the cost of each class of work.

⁵For a complete description see the Annual Report of the Bureau of Highways, Philadelphia, 1914, p. 119-123.

⁶Report for 1914, Bureau of Highways and Street Cleaning, Philadelphia, p. 119-120.

(f) To produce in the subordinate employees the beneficial moral effect resulting from a realization that records of their performances are brought to the attention of their superiors.

(g) To promote friendly competition between similar units of the organization and establish a sort of *esprit de corps* among the men.

As has been said, these records make it possible to compare one administration with another and with similar work done by private concerns, in matters of expenditure, but without them the administrator himself cannot find the weak points in his own work.

An illustration of the advantage of keeping records of this kind was in connection with the bituminous surface treatment work, which is the principal factor in modern highway maintenance of water-bound macadam streets and roads. The unit cost records of this work performed in 1913 showed an average cost of 7.3 cents per square yard, while in 1914, the average cost was 5.8 cents per square yard, or a saving of 1.5 cents per square yard over 1913. This saving was a direct result of making an analysis of the items of cost for 1913, through which it was possible to point out the weak points in the performance of the work, with the result that in 1914 more attention was given to the different operations of the work, the cost of which was considered to be too high the previous year. Of this saving of 1.5 cents per square yard, about one-half cent per square yard was due to the fact that a number of the treatments were second applications and naturally required a less amount of bituminous material per square yard, and the reduction in the cost of gravel, but approximately one cent per square yard (or a saving of fourteen per cent, of the entire cost of the work) was entirely due to the increased efficiency of the organization in handling the work. A further study will be made of the costs of this work and also the unit costs of all work performed by the bureau, with a view to pointing out ways and means of conducting the work in a more efficient and economical manner next season.⁷

A similar system of cost keeping has been installed in the Water Bureau, with similar results. One instance only will be given. In the pipe-laying work of the Bureau, the effort at a unit cost keeping system has led to more adequate records, by which, not only the work of one district can be compared with another, but the work of each gang can be compared with that of the other gangs doing similar work in the Bureau. True, many jobs here may be unlike in size and difficulty, so comparisons may be of little value, but other jobs are fairly equal, and should show a somewhat similar cost. When a district shows a high cost for a particular kind of work, it is possible to find the particular gang or gangs in that district who are responsible. The cost of pipe laying and repair are kept by districts. The man in charge of all the pipe

⁷ Report of the Bureau of Highways and Street Cleaning, Philadelphia, for 1914, p. 4-5.

laying and the man in charge of each district have before them the average labor cost of similar work in each district, as well as the average for the year (Table C). It is easy to see which district is falling behind on jobs of similar nature, and if the reason is not self-evident to the man in charge, the records of the gangs in that district can be gone into and the trouble located. For instance, from

TABLE C—AVERAGE LABOR COST OF WORK PERFORMED IN DISTRICTS
JULY, 1914

DISTRICT	1D Drawing ferrules for leaks. Caulking joints on mains. Repairing city laterals		2D Drilling for new ferrules. Reaming for ferrules to increase water supply		3D Drilling for ferrules on building operations		4D Replacing ferrules drawn for leaks		11D Private or fire connection complete	
	No. of jobs	Av. labor	No. of jobs	Av. labor	No. of jobs	Av. labor	No. of jobs	Av. labor	No. of jobs	Av. labor
Yellow	20	\$6.61	41	\$1.26	83	\$0.18	8	\$0.70	1	\$5.63
	207	5.47	216	.87	450	.16	64	.86	3	12.19
Red	91	10.39	193	.98	31	.44	5	.65	..	..
	434	8.15	568	1.06	104	.36	30	1.13	4	17.06
Blue	50	7.87	17	2.17	48	.27	11	2.12	..	..
	222	5.63	91	1.69	125	.49	54	1.65	5	12.78
Green	21	9.31	128	1.17	81	.40	..	..	1	19.34
	92	6.54	500	1.15	246	.33	12	1.00	4	18.29
White	33	4.75	49	1.03	95	.31	1	1.13	1	23.95
	106	5.05	322	.94	457	.20	10	1.24	3	24.03

	1V Cutting in new valves on lines already laid		2V Renewing valves		3V Shifting valves		4V Removing or dismantling valves		6V Placing concrete boxes, frames and covers on old lines where no new work done	
	No. of jobs	Av. labor	No. of jobs	Av. labor	No. of jobs	Av. labor	No. of jobs	Av. labor	No. of jobs	Av. labor
Yellow	..	..	..	..	..	..	..	..	1	\$6.94
	1	28.44	8	10.78	..	..	2	8.26	27	6.83
Red	..	..	..	..	..	..	..	..	..	..
	1	81.16	2	27.75	..	..	..	..	11	5.96
Blue	3	10.31	..	..	..	..	1	13.02	36	8.44
	5	8.54	10	13.49	..	..	4	9.34	207	5.77
Green	..	..	..	..	..	..	..	..	17	5.29
	2	19.88	2	12.95	..	..	..	..	35	5.14
White	..	..	1	16.06	..	..	..	..	27	7.53
	..	..	2	13.67	..	..	..	..	73	6.66

TABLE C—*Continued*

DISTRICT	7V Placing brick boxes, frames and covers on old lines where no new work is done		1H Cutting in new fire hydrants on lines already laid		2H Renewing fire hydrants		2Y Making concrete boxes			
	No. of jobs	Av. labor	No. of jobs	Av. labor	No. of jobs	Av. labor	No. of jobs	Av. labor		
Yellow	37	\$9.66	1	\$5.63	22	\$6.63	..	..
	162	7.94	1	5.63	65	5.80	..	..
Red	41	6.65	33	13.51	25	7.23	..	..
	129	6.95	33	13.51	60	7.95	..	..
Blue	3	5.37	..	..	26	7.85	3,142	\$.06		
	8	6.53	5	10.93	99	5.65	13,502	.04		
Green	32	8.89	..	..	6	7.59	920	.13		
	99	7.24	1	10.13	24	6.15	1,944	.11		
White	..	..	1	13.08	10	8.04	2,832	.07		
	88	7.14	1	13.08	49	7.38	6,206	.08		

the monthly statement of July, 1914, Column 7 V: "The placing of brick boxes, frames and covers on old lines where no new work is done," is an operation that is fairly uniform in the difficulty and time ordinarily required. We find that the labor cost varies in the different districts from \$5.37 to \$9.66. Although the low figure was reported from a district which had done but three such jobs in the month, while the high cost was reported from a district that had 37, still the difference is sufficient to cause a careful supervisor to inquire into its cause. Of course the keeping of the records of costs is necessary so that those in charge will know there is a difference in cost.

4. *Concerning the Purchase of Supplies and Their Inspection*

The city buys a great amount of supplies of one kind or another in the course of a year. Next in importance after price consideration, it should be known whether the city gets what it pays for. The setting up of definite standards wherever possible and then testing the products of the different bidders to see which come up to it is possible with an increasing number of supplies. Take the one item of asphalt used for paving. A complete system has been set up by the Bureau of Highways, by which not only is the material inspected in the plants, and a complete record kept of the output of

plants selling the product to the city, but samples are taken daily for laboratory testing. It is no longer left to the judgment of a laborer without technical education, who perhaps determined the hardness by chewing, or the consistency by sticking pieces on the wall.⁸ Today this work is done by competent engineers, who have at their disposal modern scientific apparatus. Such defective materials as are found in the plants are never sent to the paving job. All materials used on any contract in the Bureau of Highways are inspected after they have been received. This rigid inspection of material results in raising the standard, and though high grade materials may be slightly higher in first cost, their use will ultimately prove a great saving to the city. There seems to be no good reason why the city should not always get just what it contracts for—if that is the desire of the city. The step toward standardization of specifications for material, which has been taken by the three principal bureaus of the Department of Public Works⁹ is significant. To have a single set of standard clauses used in the specifications throughout the city's departments would guard against future irregularities. It would do much toward efficiency in purchasing. Adequate tests and inspection of the work and material purchased is likewise essential, and easily possible.

5. *Concerning Planning of Work*

One other method employed at the present time in the Bureau of Highways should also be mentioned. It is a large wall map, on which the kind of paving on each city street is shown, by a different colored line, as well as paving in process of construction or authorized. Pins of various kinds and colors indicate the status of the city's paving work, and the condition of the streets. Such other information as dates, sums of money spent, etc., cannot be shown on the map but are available in a visible card index case along side of the map. This is a simple and cheap device by which the Chief of the Bureau can tell at a glance the status of the vast amount of paving operations which the city carries on all the time, and the status of maintenance work on paved streets. For these two items alone the city is spending over \$6,000,000 per year. It visualizes

⁸ See Report of the Director of Public Works, Philadelphia, 1914, p. 78.

⁹ Report of the Director, Department of Public Works, 1914, Philadelphia, pp. 3-4.

“unbalanced” work, such as giving one section of the city more than its share of improvements to the neglect of some other section and likewise shows up dangerous conditions in streets or pavements. It gives the chief direct control over the operations under his direction.¹⁰ Similar boards are already in operation in the Division of Bridges and Sewers of the same Bureau, as well as in the District Offices. One is also used in connection with the pipe-work of the Water Bureau. Its use might be profitably adopted by a good many other bureaus and departments.

These illustrations are isolated instances of progress toward efficiency in city administration. They have by no means exhausted the list, nor do they represent a finished or perfect result. They are given with no thought of proving a case, but as suggesting possibilities for the future. It is encouraging to know that even in Philadelphia real progress toward efficiency has been made, and it leads us to hope that what has been done here can be improved—and repeated.

¹⁰ *Engineering Record*, Dec. 11, 1915, pp. 714-16.